

Thermal Heat To Save Millions In Exploration Costs

A new technique which uses a highly sensitive method of determining the thermal history of the rocks in the Earth's crust, from which oil is generated, has the potential to save exploration companies millions of dollars in wasted effort, according to CSIRO scientists.

The technique, called U-Th-He thermochronology, first developed by academia, is now being implemented by scientists from CSIRO and Geotrack International for application in the petroleum industry. "This method has the potential to save companies millions of dollars in wasted exploration effort by enabling them to withdraw earlier from unwarranted drilling programs", said Geotrack scientist Dr Paul Green.

"What we do is to save time elsewhere by eliminating some of the uncertainty and providing firm thermal history constraints. Most companies spend days modelling different scenarios and risking the outcomes. The application of this technique can reduce the time required by showing which scenarios are likely and which are not possible."

CSIRO Petroleum Resources scientist, Dr Peter Crowhurst, said the technique allowed information to be obtained at lower temperatures than ever before. It can also

identify the most recent event that occurred in a basin and its possible effects on petroleum migration. "Of particular interest to clients is our ability to determine U-Th-He ages on single crystals of apatite and zircon", said Dr Crowhurst. "This offers greater precision than work on multiple crystals because it reduces the risk of contaminated samples or a mixed age.

"The improved definition of the timing and magnitude of palaeo-thermal episodes provided by this integrated approach means an improved definition of areas where timing of oil generation post-dates formation of structures, resulting in more efficient exploration."

CSIRO Petroleum, in collaboration with Geotrack International and New Zealand's University of Waikato, has become the first in the world to directly apply this technique to practical thermal history issues in the petroleum industry.

The scientists involved believe the technique has the potential to generate commercial business from petroleum companies and geological surveys around the world. Several pilot studies and commercial analyses using this technique have been successfully completed on basins in Australia, the Gulf of Mexico, the North Sea and Colombia. ■